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EXAMINER

AJIBADE AKONAI, OLUMIDE

ART UNIT	PAPER NUMBER
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2617

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,543	Applicant(s) HABETHA ET AL.	
	Examiner OLUMIDE T. AJIBADE AKONAI	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 and 35-37 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35-37 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-9, 11-15, 18, 19, 25 and 27-33 is/are rejected.
- 7) ☒ Claim(s) 6, 16, 17, 20-24 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/23/2010</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed March 26, 2010 have been fully considered but they are not persuasive. Regarding claim 1, the applicants' representative asserts the Solakannel fails to disclose "a beacon frame that includes a reservation for a planned transmission by a sender device during the superframe". The examiner respectfully disagrees and maintains that the control information transmitted during the beacon period that comprises the information on allocation of time slots (see col. 7, line 63-col. 8, line 2) reads on applicants' claimed limitation "a beacon frame that includes a reservation for a planned transmission by a sender device during the superframe" because the allocated time slots represent a period in the superframe that the other devices in the piconet can transmit information, which means that the information transmitted during the beacon period to other devices in the piconet contains allocated/reserved time slots for the other devices so that they can transmit during the allocated time slot (which reads on planned transmission). The 35 U.S.C. 102(e) rejection of claim 1 is maintained and repeated below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-4, 7-9, 11-15, 18, 19, 25, 27-33 are rejected under 35 U.S.C. 102(e) as being anticipated by **Solakannel et al 7,245,947 (hereinafter Solakannel)**.

Regarding **claim 1**, Solakannel discloses a method of decentralized medium access control in a communications network (see fig. 1, col. 4, lines 1-9) including a plurality of devices (wireless devices 102, 104, see fig. 1, col. 4, lines 1-9), comprising the steps of: dividing time into a sequence of at least one superframe (see fig. 5, col. 7, lines 58-62); and a first device (wireless device 102, see fig. 1, col. 4, lines 1-9) of said plurality of devices transmitting in the superframe at a target beacon transmission time (TBTT) (piconet coordinator device 102 transmitting in the superframe at the beginning of the beacon period start time of the superframe, see figs. 1 and 5, col. 7, lines 63-66) a beacon frame (102 transmitting beacon information to other devices in the piconet, see figs. 1 and 5, col. 7, lines 62-67, col. 8, lines 1-2) that includes a reservation for a planned transmission by a sender device during the superframe (102 transmitting beacon information to other devices in the piconet, the beacon information including information on allocation of transmission timeslots to other devices in the piconet, see figs. 1 and 5, col. 7, lines 62-67, col. 8, lines 1-2).

Regarding **claim 2** as applied to claim 1, Solakannel further discloses wherein: said first device is the sender of said planned transmission (wireless device 102, see fig. 1, col. 4, lines 1-9); and further comprising: the sender including the reservation in a

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beacon frame in all superframes during which the reservation is active (102 transmitting beacon information to other devices in the piconet, the beacon information including information on allocation of transmission timeslots to other devices in the piconet, see figs. 1 and 5, col. 7, lines 62-67, col. 8, lines 1-2), and b. including, by a receiver device of the planned transmission, said reservation in a beacon frame in all superframes during which the reservation is active (102 transmitting beacon information to other devices in the piconet, the beacon information including information on allocation of transmission timeslots to other devices in the piconet, see figs. 1 and 5, col. 7, lines 62-67, col. 8, lines 1-2).

Regarding **claim 3**, Solakannel further discloses the method of claim 1, further comprising grouping the beacon frame transmitted by each of the plurality of devices into the superframe as at least one beacon period having a starting point at a beacon period start time (BPST) and followed by a data transmission phase (see fig. 5, col. 7, lines 58-65).

Regarding **claim 4**, Solakannel further discloses the method of claim 1, further comprising prior to a new or a change of an existing reservation of the sender device, the sender device negotiating with a receiver device of the transmission that is planned during the reservation (see fig. 5, col. 7, lines 58-67, col. 7, lines 1-10).

Regarding **claim 7**, Solakannel further discloses the method of claim 1, further comprising including in the beacon frame of the first device a starting time of the reservation relative to a reference point selected from the group consisting of the TBTT of the first device, the BPST of the beacon period in which the first device is transmitting

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the beacon frame, the beginning of the superframe, a time period of the superframe, and a time slot of the superframe (piconet coordinator device 102 transmitting in the superframe at the beginning of the beacon period start time of the superframe, see figs. 1 and 5, col. 7, lines 63-66).

Regarding **claim 8**, Solakannel further discloses the method of claim 7, wherein: the starting time of the reservation is given relative to said reference point in the next following superframe, in which said first device will transmit its next beacon frame; and if proposed by the receiver device, the at least one alternative available time for the reservation is given relative to a reference point in the next following superframe, in which said receiver device will transmit its next beacon frame (piconet coordinator device 102 transmitting in the superframe at the beginning of the beacon period start time of the superframe, followed by transmitting in the time slots MTS see figs. 1 and 5, col. 7, lines 63-66).

Regarding **claim 9**, Solakannel further discloses the method of claim 1, further comprising: maintaining by each device of said plurality a table of all planned reservations received or sent by the device (see figs. 1 and 5, col. 7, lines 58-66).

Regarding **claim 11**, Solakannel further discloses the method of claim 1, further comprising: defining said superframe as comprising a plurality of medium access time slots; and defining a reservation as a starting time slot of said plurality of medium access time slots and a duration as a number of medium access time slots (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 12**, Solakannel further discloses the method of claim 1, further comprising: defining said superframe as comprising a plurality of time units; and defining a reservation as a starting time in time units and duration as a number of time units (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 13**, Solakannel further discloses the method of claim 1, further comprising: defining said superframe as comprising a plurality of medium access time slots; and defining a reservation as at least one bit in a bitmap comprising at least one bit per each medium access time slot of said plurality of medium access time slots (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 14**, Solakannel further discloses the method of claim 1, further comprising: defining said superframe as comprising a plurality of medium access time slots; and defining a reservation as at least one element selected from the group consisting of a reservation period, a reservation offset, a reservation period offset, a reservation duration, a bitmap of at least one medium access time slot and a type of reservation (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 15**, Solakannel further discloses the method of claim 1, further comprising defining a reservation as one element selected from the group consisting of:

- a plurality of reservations per superframe and valid for a single superframe, - a plurality of reservations per superframe and valid for a plurality of superframes, - single reservation per superframe and valid for a single superframe, and - single reservation per superframe and valid for a plurality of superframes (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 18**, Solakannel further discloses the method of claim 2, further comprising implicitly negotiating the reservation using a first beacon frame of the sender device and a first beacon frame of the receiver device (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 19**, Solakannel further discloses the method of claim 1, further comprising including availability information in a beacon frame of a device (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 25** as applied to claim 2, Solakannel further discloses wherein the beacon frame (400) (see fig. 5, p.4, [0035]) of the transmitting and including steps comprises a distributed reservation protocol (DRP) information element (IE) (700) that includes information regarding the position of at least one reservation (707) in the superframe (100) (see fig. 5, p.4, [0035]).

Regarding **claim 27** as applied to claim 1, Solakannel further discloses wherein: the transmitting includes in the beacon frame information of a reservation selected from the group consisting of a starting point and duration, and a bitmap; and the including is optional (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 28**, Solakannel further discloses the method of claim 1, further comprising respecting the reservation by all devices receiving a beacon frame that includes the reservation (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 29**, Solakannel further discloses the method of claim 1, further comprising: including information on a direction of the planned transmission in the beacon frame; and only devices within a transmission range of a receiver device

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respecting the reservation, in case of a unidirectional planned transmission (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 30** as applied to claim 25, Solakannel further discloses wherein only the receiver device performs the including step to include the reservation IE in the beacon frame (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 31** as applied to claim 25, Solakannel further discloses wherein only receiver devices and all 1-hop neighbor devices of receiver devices perform the including step to include the reservation IE in the beacon frame (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 32** as applied to claim 25, Solakannel further discloses wherein the sender device, receiver devices, and all 1-hop neighbor devices of the sender device and receiver devices perform the including step to include the reservation IE in a beacon frame (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Regarding **claim 33**, Solakannel further discloses the method of claim 27, further comprising: in case of a Soft Reservation, starting an own transmission if the sender device does not use the reserved time; - in case of a Hard Reservation, not accessing the medium if the sender device of the planned transmission does not use the reserved time; and - in case of a Beacon Period Reservation, reserving the time for beacon transmission only (see fig. 5, col. 7, lines 58-62, col. 8, lines 1-12).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Solakannel et al 7,245,947 (hereinafter Solakannel)** in view of **Kondylis et al 6,665,311 (hereinafter Kondylis)**.

Regarding **claim 5** as applied to claim 4, Solakannel discloses the claimed limitation except wherein, said negotiation step comprising the steps of: an initiator device of the reservation transmitting a distributed reservation protocol (DRP)-Request message comprising at least one reservation description selected from the group consisting of a starting time, and a duration signaled by means of BPST or TBTT offset, a reservation period, a bitmap indicating the reserved times, at least one time slot number, a priority, a channel/hopping indicator, and a code sequence; and in response to said DRP-Request, said negotiation step further comprises the step of at least one receiver device of the reservation transmitting a distributed reservation protocol (DRP)-Response message that includes an indicator selected from the group consisting of the proposed reservation is accepted, the proposed reservation is rejected with an alternative reservation proposal and the proposed reservation is rejected without an alternative proposal.

Kondylis, however, discloses an initiator device negotiating a reservation with another device (nodes in a ad hoc wireless network, see col. 4, lines 53-61), the negotiating consisting of the steps of: transmitting a distributed reservation protocol (DRP)-Request message comprising at least one reservation description selected from the group consisting of a starting time, and a duration signaled by means of BPST or TBTT offset, a reservation period, a bitmap indicating the reserved times, at least one time slot number, a priority, a channel/hopping indicator, and a code sequence (reservation request comprising identity of the requesting node and data slots to be reserved, see col. 17, 29-33, and lines 46-52); and in response to said DRP-Request,

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said negotiation step further comprises the step of at least one receiver device (301) of the reservation transmitting a distributed reservation protocol (DRP)-Response message that includes an indicator selected from the group consisting of the proposed reservation is accepted, the proposed reservation is rejected with an alternative reservation proposal and the proposed reservation is rejected without an alternative proposal (NACK, see col. 18, lines 20-37).

It would therefore have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kondylis by having a node in an ad hoc wireless network transmit a reservation request for a beacon slot to other neighbor nodes in the network, into the system of Solakannel for the benefit of providing a conflict-free broadcast schedule in the network.

Regarding **claim 10** as applied to claim 1, Solakannel discloses the claimed limitation except further comprising the steps of: a receiver device of said reservation sending a poll packet to the sender device; upon receipt of the poll packet, the sender device sending at least one data packet to the receiver device; and the receiver device acknowledging receipt of at least one data packet by transmitting an acknowledgement (ACK) packet. Kondylis however, further discloses a receiver device and a sender device (nodes in a ad hoc wireless network, see col. 4, lines 53-61), the receiver device for a reservation sending a poll packet to the sender device (see fig. 13, col. 21, 65-67, col. 22, lines 1-12); upon receipt of the poll packet, the sender device sending at least one data packet to the receiver device (see fig. 13, col. 21, 65-67, col. 22, lines 1-12); and the receiver device acknowledging receipt of at least one data packet by

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transmitting an acknowledgement (ACK) packet (see fig. 13, col. 21, 65-67, col. 22, lines 1-12).

Allowable Subject Matter

6. Claims 6, 16, 17, 20-24, 26 and 36 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 35-37 are allowed.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLUMIDE T. AJIBADE AKONAI whose telephone number is (571)272-6496. The examiner can normally be reached on M-F, 8.30p-5p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

OA

/Charles N. Appiah/
Supervisory Patent Examiner, Art Unit 2617